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ABSTRACT

The Butte College Tech Prep Consortium (TPC), in Oroville, California, is a cooperative effort of secondary and postsecondary schools, local businesses, and community organizations to develop and implement Tech Prep opportunities in the area. The TPC has developed a competency-based, comprehensive tech prep curriculum model that is applicable to the differing needs of the institutions involved. Under the model, each participating secondary partner can generate education plans for its students in every program offered by Butte College (BC) and students can develop competencies through a range of courses, workplace experience, or extracurricular activities. Other advantages of the model include its adaptability to long range changes and School-to-Work requirements and continuity with previous cooperative efforts such as 2+2 and 2+2+2 arrangements. The model establishes a balance between the academic core of sciences, communications, mathematics, and physics; technical and vocational preparation; and career development, focusing on developing students' critical thinking, teamwork, and other personal qualities. The model's curriculum development plan includes the following five steps: (1) secondary schools identify programs they wish to target; (2) teams of consortium partners define competencies for each element in the curriculum; (3) competencies are tied to courses and activities; (4) project participants define and negotiate competency standards; and (5) formal program articulation agreements are established between secondary schools and BC. Diagrams of program organization and sample competency equivalencies are attached. (KP)

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BUTTE COLLEGE TECH PREP CONSORTIUM PARTICIPANTS

EDUCATIONAL PARTNERS

Chico Senior High School
Gridley High School
Hamilton City High School
Las Plumas High School
Oroville High School
Orland High School
Paradise High School
Pleasant Valley High School
Willows High School
Butte County ROP
Glenn County ROP
California State University, Chico

BUSINESS PARTNERS

N.T. Enloe Hospital, Chico, CA
Pacific Gas and Electric, Chico, CA
Brown & Company Retail Clothiers, Gridley/Oroville, CA
Butte County Farm Bureau, Oroville, CA
Spectra-Physics, Oroville, CA
Feather River Hospital, Paradise, CA
Schuller International, Willows, CA
First Interstate Bank, Willows, CA

ORGANIZATIONAL PARTNERS

Rotary International, Kiwanis,
American Association of University Women,
Chambers of Commerce

A Competency-Based, Comprehensive Tech Prep Curriculum Model that Serves All Students

Introduction

Place a mark in the box for each statement that applies to your consortium?

- ❑ Not every participating institution has the same level of commitment and resources.
- ❑ No high school meets the needs of all its students by offering one or two educational programs.
- ❑ Students possess markedly different levels of preparation at any given grade level.
- ❑ The ability and commitment of leadership varies from one school to the next.
- ❑ The level of commitment to Tech Prep is different from department-to-department and program-to-program within the community college.
- ❑ Each participating institution wants to develop and implement Tech Prep at a pace which fits smoothly with all the other things they are doing.
- ❑ People don't embrace the prospect of fundamental change without reservations.

Each and every one of these applies to our consortium. Our single greatest challenge in developing a workable curriculum model was arriving at a plan that produced a common outcome when the participating institutions and their students had differing needs. If your consortium's plan calls for a broad participation of schools, students, and programs, all or nearly all of these statements surely apply to you.

We believe this curriculum model and the process we have used to implement it addresses each of the above realities while ensuring a quality Tech Prep opportunity for the students we serve. As you gather information about this model, be thinking about how your Tech Prep consortium can benefit.

Premises on Which the Model Rests

This curriculum model rests on four premises which apply to our consortium and, we believe, apply to most others:

- ***In the foreseeable future, Tech Prep students won't constitute a majority in any of Butte College's technical/vocational programs.***

  Recent high school graduates are but one group served by our technical/vocational programs. The dominant number are re-entry students; recent immigrants; and current members of the workforce undergoing retraining, rehabilitation, and upgrading. We see this group continuing to dominate our enrollments for the next decade or more.

- ***Butte College must offer its students coursework/experiences which develop all of the competencies up to the Associate Degree level.***

  The above-mentioned students arrive at Butte College with educational needs that require us to offer a full range of educational experience in order to develop competencies from the beginning level to the most advanced. Consequently, we must offer educational programs to address this reality.

- ***Competencies not developed at the secondary level will be the responsibility of Butte College.***

  Because Butte College must offer the full Tech Prep package to its adult students, anything the secondary school does not, or cannot, do can be done after the student enrolls at the college. This allows each secondary partner to do only what it chooses and not be forced into an all-or-nothing decision. It also allows for the evolution of more highly articulated programs as, over time, secondary schools are able to offer more opportunities to their students.

- ***An agreed-upon system of assessment and accountability assures the program's integrity.***

  Because the curriculum is competency-based and both the competencies and the demonstration standards are approved by the business partners, there is an assurance that the curriculum is appropriate and the students have acquired what they need in preparation for success in the workplace. As national standards are developed through current legislation, national benchmarks will exist to validate the appropriateness of each consortium's competencies. Our challenge is to develop and implement assessment and accountability mechanisms which accurately portray our students' skills and abilities.

CHARACTERISTICS OF THE MODEL

- *Flexibility — The model is flexible for students, business partners, and the educational partners.*

  Students are presented with educational options which, regardless of the student's level of preparation, result in a clearly defined Tech Prep education plan individualized to their circumstances. Each participating secondary partner can generate education plans for Tech Prep educational opportunities for its students in every program offered by Butte College. This can even be done in those technical/vocational areas where the high school does not offer a specific program. Additionally, there may be a number of ways a student can develop a particular competency. More than one course may address the same competency, workplace experience may be an alternative, and extracurricular activities could potentially contribute. The breadth of involvement and the range of opportunity for inclusion in the development of student competencies is only limited by our creativity.

- *Applicability — The model has maximum application to current conditions while being adaptable to long-range change.*

  Accomplishing the development and implementation of a Tech Prep program in the current climate of shrinking resources, school restructuring, and the multitude of other factors which influence what we are able to do and how we are able to do it is somewhat like trying to change the engine of an airplane while it is in flight. This model can be applied to all districts at the level they are prepared to support, in the technical/vocational programs they wish to pursue, and in the style they choose to adopt. It can also be modified to meet changes that develop over time. We have already incorporated the School-to-Work Opportunities Act into our model.

- *Continuity — The model builds on previous cooperative efforts such as 2+2/2+2+2.*

  In order to establish a smooth transition, whenever possible, this model uses what has already been established as the foundation on which the Tech Prep program is built. Work experience, cooperative education, existing curriculum, and state model frameworks all have a place in the model. Each participating institution can decide what to keep, what to modify, and what to discard.

- *Adaptability — The model allows participants to develop programs at a pace and level that best meets their individual needs.*

  Each school or college, faced with its unique conditions, develops a plan for its Tech Prep program. This model can be used to implement the initial plan and each of the revisions that time and circumstance cause to develop. It can fit every restructuring model as well as more traditional programs.

The Comprehensive Tech Prep Curriculum: The Three Components and their Elements

The Tech Prep educational opportunity is distinguished from traditional vocational education programs primarily because of the balance it establishes between the Academic Core, Technical/Vocational Preparation, and Career Development experiences of students. It views each of these components as fundamental to a quality educational program. Because of this balance, a climate of cooperation between academic and vocational faculty, counselors, administrators, parents, and business partners emerges. If any one component becomes too dominant the quality of the program suffers and it is in the best interest of all the partners to reestablish balance.

Academic Core

Our current model addresses the traditional Tech Prep disciplines of biology/chemistry, communications, mathematics, and physics. Individual schools may add other disciplines such as humanities, fine arts, and social sciences if they want the Core to address needs that go beyond Tech Prep. We have removed the applied designation; not because we don't support that instructional methodology; but because the goal of the model is to produce results not dictate methods. Limiting our thinking to applied learning may preclude inclusion of what has worked well in the past and breakthroughs that may be just beyond the horizon.

The academic core establishes the common foundation all Tech Prep students must have, regardless of their particular program. When completed, it equips each student with significantly more advanced academic knowledge and skills than we currently expect of "middle majority" students. With this foundation, our program will serve students who change their educational program or, who during their working lives, redirect their careers.

Technical/Vocational Preparation

The Technical/Vocational preparation gives focus and relevance to the students' educational experience. It also is the mechanism through which appropriate connections are made to the business community. In a sense, it is the "hook" that is used to ensure that the student learns what we know they need to know by allowing them to do what they choose to do.

Because the community college has programs in each of the pathways described in federal legislation, we are prepared to work with each secondary partner in whatever area they are best equipped to serve their students. Over time, it is likely that new college programs will evolve from our Tech Prep efforts. We are already making modifications in our existing programs to accommodate our secondary partners and the most recent job market information.

Career Development

We feel, the emphasis our project is giving career development and the well defined and measurable competencies we use as our goals sets us apart from mainstream Tech Prep efforts. The message our consortium hears from business partners is that, although the absence of academic and technical skills is a serious problem in prospective employees, the lack of personal qualities important to success in the workplace is even more important. By directing our efforts toward the development of those qualities in our students we meet this workplace need while we broaden the base of participation in the Tech Prep program.

By the same token, our students are faced with the reality of multiple career changes during their work lives and, therefore, must be equipped with the tools they need to ensure successful adjustment to these changes. A startling fact we must always remember is that *today's students are projected to experience between six and nine significant career changes during their work lives and half of these will be involuntary.*

Teamwork, critical thinking, dependability, and initiative are examples of the those personal qualities included in the SCANS Competencies. When we make the development of those competencies in our students an educational goal, we make a place for music, history, physical education, art and many other disciplines not included in most Tech Prep efforts. This also allows extracurricular programs to specify in what way they contribute to the development of students' competencies and, thus, validates their importance in the total school program.

Career Development is the part of our curriculum which accommodates the needs of the School-to-Work Opportunities Act. We see career development competencies being developed through career education, classroom instruction, and experiential education (workplace learning). Classroom instruction takes place in stand-alone courses as well as through the integration of career education into our existing curriculum. Experiential education includes a variety of experiences such as job shadowing, mentoring, work experience/cooperative education, internships, and youth apprenticeships.

An important characteristic of this component is the developmental nature of the plan. Students are involved in activities appropriate to their age and interest. Our project has found the NOICC National Career Development Guidelines especially valuable in organizing this effort.

The Curriculum Development Plan

Currently, we are finishing the second year of our three-year Tech Prep project. The first year was spent in planning and culminated with each secondary partner designating the specific Tech Prep program(s) it would pursue initially. The second year has been the development year and will result in the articulation of eighteen Tech Prep programs among nine secondary schools, Butte College, two ROPs, and the business partners. The third year will see the implementation of the articulated programs and the development of new programs.

The curriculum development plan includes five steps:

Step #1 — Identify the Program

Each secondary school chose which program(s) it wished to initially target. They wrote detailed proposals to the Project Steering Committee in which they identified what they intended to do, who would do it, and when it would be done.

We feel this written commitment was important in that it can be used as a reference by all partners in the consortium. The proposal was supported in writing by senior leadership in each secondary district, appropriate business partners, and involved faculty and departments. It was also reviewed and approved by Butte College. This formalizes and defines what is to be done in the development of each Tech Prep program.

Step #2 — Define the Competencies for Each Element

Teams composed of representatives from all of the consortium participants have worked throughout the 1993-94 year in defining the competencies for each element in the curriculum. More than 130 participants worked together for three days during our 1993 Tech Prep Summer Institute to begin this work. These work groups have continued to meet throughout the year in order to complete their work.

Whenever available, existing standards have been used. The SCANS Competencies, the National Career Development Guidelines, the curricular frameworks for the state of California, and any other previously developed standards were used. Career cluster skills standards produced as a result of the Educate America legislation will be incorporated as they are available. However, the work groups were encouraged to use only those things they were in agreement with and, when necessary, to use their own expertise to write new competencies or modify existing ones.

Each Tech Prep program must identify competencies in Biology/Chemistry, communications, mathematics, and Physics. At a minimum, students are required to complete the defined Academic Core experience in each of these disciplines. If a particular program requires competency beyond the described core, it is included for that program. For example Electronic Technology requires more math than the Academic Core standard and, therefore, shows additional math within the technical/vocational preparation sequence in its progrm.

The program must also address the expected competencies within the technical/vocational preparation. In many instances well-defined standards already exist because of state licensure requirements, industry-developed expectations, or through professional organizations. As the "Educate America Act" is implemented the occupational cluster skills standards will become the benchmarks for our efforts in this area.

Within the Career Development component, SCANS competencies, and National Career Development Guidelines serve as the foundation. These two sets of nationally recognized competencies combined with the career cluster skill standards will provide the bridge our Tech Prep project needs to fit smoothly into the School-to-Work Transition process.

#3 — Tie the Competencies to Courses/Activities

After the competencies have been identified, each participating institution can identify where, within its educational program, each competency is developed. It is entirely possible that some competencies are being developed in more than one setting. This concept is critical to understanding what sets this model apart. Because we can review the competencies to see which are being developed in each course or activity, each is already a part of the Tech Prep effort or can made changes to become involved.

The inclusion of the SCANS competencies creates an opportunity to include disciplines that have historically been outside the vocational education effort. In this manner, a place for extracurricular programs in the Tech Prep effort is also created.

Each participating school or college will have its unique pattern of courses/activities which a student can use to meet the Tech Prep program expectations. This process also allows students to pursue completion of their Tech Prep program using the courses/activities which best meet their individual need.

#4 — Define and Negotiate the Demonstration Standards

Because the settings in which a student is developing competency will vary from school-to-school and from student-to-student, it is critical that project participants agree on what each student will do to verify mastery of a particular competency. The demonstration standard must be clearly defined for all students and must be consistent from student-to-student and from school-to-school. In many instances, it will be reached through a process of negotiation. There will also be times when an honest disagreement exists as to the appropriate standard and no compromise can be reached. When this happens, the ideal arbitrator of the dispute is the business partner.

This common demonstration standard is what allows students to develop competencies in a variety of settings and still fit smoothly into the community college program. The use of demonstrated competency standards is consistent with the use of student portfolios and a number of other authentic assessment strategies being developed throughout the educational community.

#5 — Articulate the Program

Formal Program Articulation Agreements between each secondary school and the college will be developed for each individual program. These agreements will encompass multiple paths to the same outcome. Because the competencies can be developed in a variety of courses/activities, virtually every department and program within the school or college can choose to be a part of the Tech Prep program. More importantly, they can commit at a level that they choose and is most appropriate.

In some cases, one secondary school will be able to accomplish significantly more than another because of its unique resources or its chosen focus. This does not force all participants into a lock-step approach but, rather, allows each to do the best it can with the resources available.

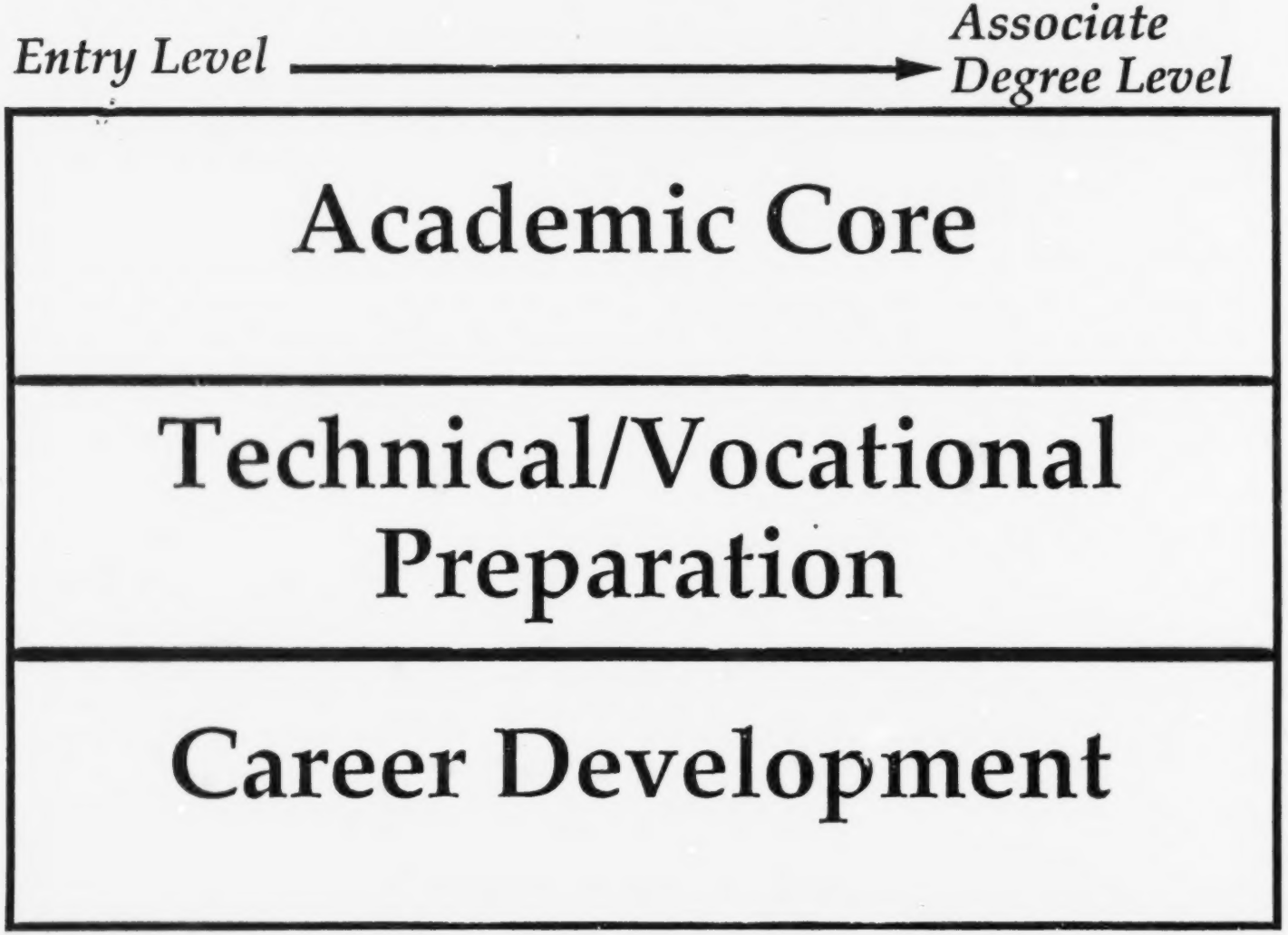
CONCLUSION

This approach to the development of the Tech Prep educational opportunity has allowed our project to overcome many of the difficulties we would have had using a more traditional approach. Although all Tech Prep students will complete the program with the same outcomes, they arrive at that point from a variety of paths. The individual uniqueness of each school and of each student can be factored into the educational planning process. This fact has done more to overcome the challenges to a successful Tech Prep partnership than any single decision made in our project. The same advantages exist for other consortia, regardless of their size, program focus, or particular set of local circumstances.

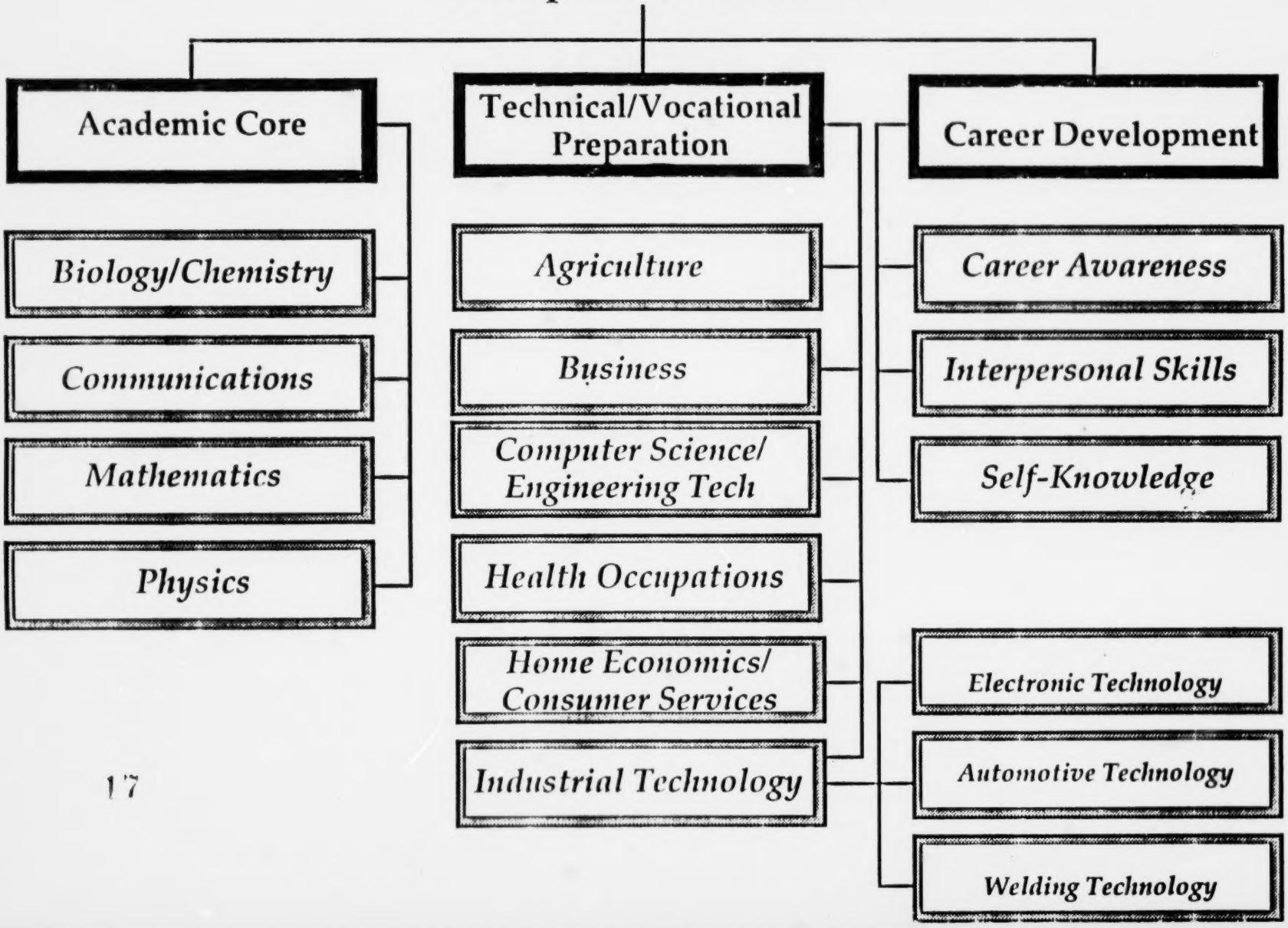
Premises on Which this Model Rests:

* In the foreseeable future, Tech Prep students won't constitute a majority in any of Butte College's Technical/Vocational programs.
* Butte College must offer its students coursework/ experiences which develop all of the competencies up to Associate Degree level.
* Any competency a secondary partner *does not* develop will be the responsibility of Butte College.
* A jointly agreed on assessment and accountability system ensures the program's integrity.

Tech Prep Curriculum Model: The Three Components



Tech Prep Associate Degree Curriculum Model: Component Elements



Curriculum Development Plan

Step #1 - Identify the Program - ***(Completed through pilot application proposals Spring 1993)***

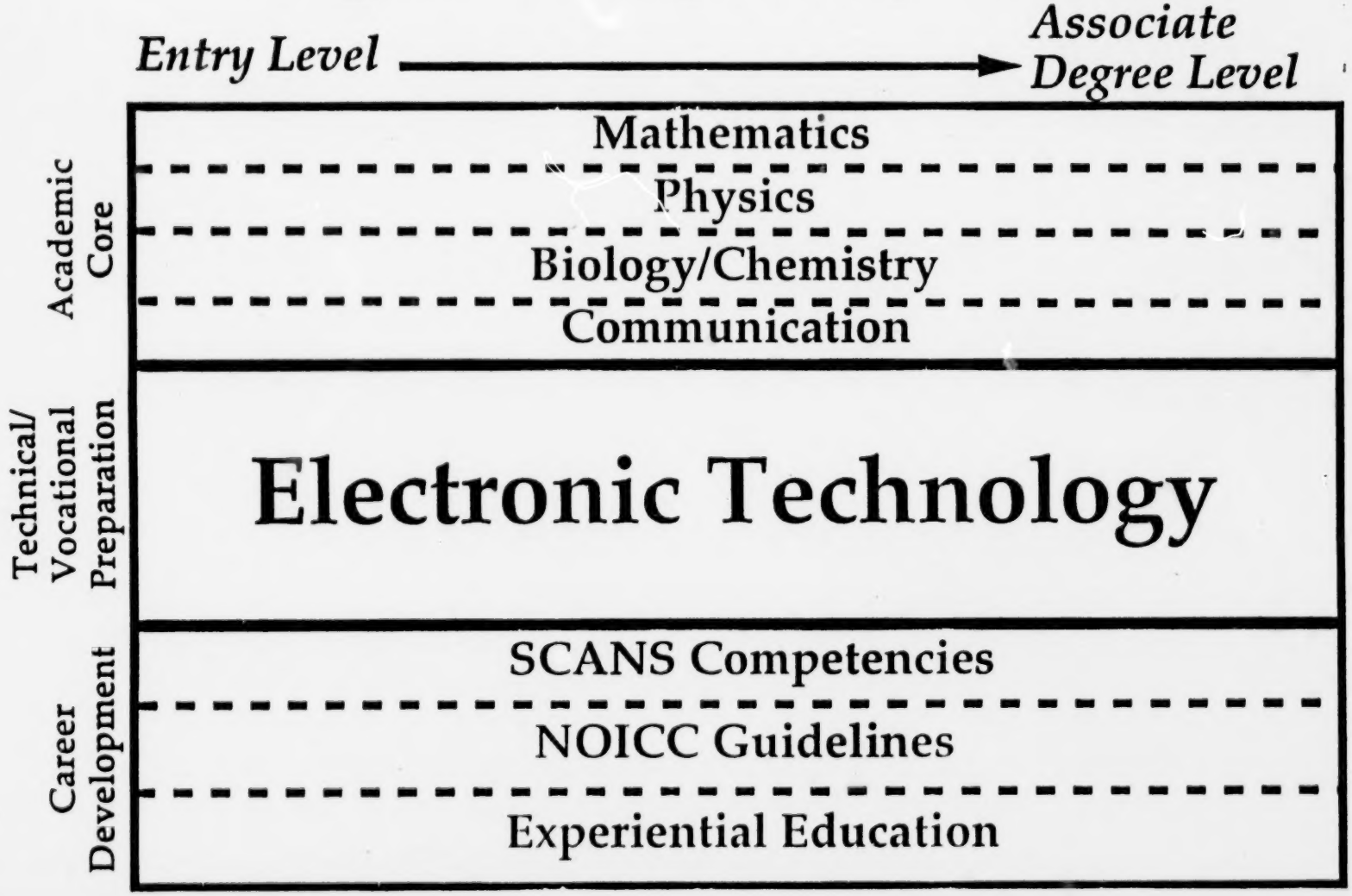
Step #2 - Define the Competencies for each Element - ***(Process begun during 1993 Summer Institute. To be completed Spring 1994.)***

Step #3 - Tie Competencies to Courses/Activities - ***(Ongoing during Fall 1993/Spring 1994, completed April 1994)***

Step #4 - Define and Negotiate the Demonstration Standards - ***(Ongoing during Fall 1993/Spring 1994, completed April 1994)***

Step #5 - Articulate the Program ***(Completed May 1994)***

Tech Prep Curriculum Model: Program Competency Elements



Tech Prep Competency Statement

Program: Electronic Technology **Competency Number** 22

Component: Career Development **Curricular Element:** SCANS

Competency Statement:

The student will be able to participate successfully as a member of a group.

Competency Development Activities:

Alpha/Omega High School
- Math A
- Ag 100
- Marching Band
- Senior Project: Community Services Component

Demonstration Standards:

a. Students will take part in group activities which have commonly agreed-on goals and will contribute to the success of the group. Documentation of this activity will be available in their student portfolio.

b. Students will be SCANS Competency verified by their professional supervisor(s) through their ongoing performance in meeting the community service graduation requirement.

High School Principal	Department Chair, Butte College	Articulation Officer, Butte College

ACADEMIC CORE: MATH - Alpha/Omega High School and Butte College

Competency #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
BUTTE	MATH	MATH	MATH	MATH	MATH	MATH	MATH	MATH	MATH	MATH	MATH	MATH	MATH	MATH	MATH	MATH
	108A	108A	108A	108B	108B	108B	108B	110	124	124	124	20	20	13	18	18
	200*	200*	200*	200*	101**	101**	101**	101**				101**		23	101**	
	108	108	108	108	108	108	108							28		
ALPHA/OMEGA	MATH	MATH	MATH	MATH	MATH	MATH	MATH	MATH	MATH	MATH	MATH	MATH	MATH		MATH	
	A	A	A	A	A	B	B	C	B	B	C	D	D			
	1*	1*	1*	1*	2**	2**	2**	2**				2**			2**	
	Butte MATH 200 and Alpha/Omega MATH 1 are CORD Applied Math I courses.															
	Butte MATH 101 and Alpha/Omega MATH 2 are CORD Applied Math II courses.															

Technical/Vocational Preparation: Electronic Technology

Butte College and Alpha/Omega High School

Competency #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Butte																
ELT		40/41	40/41	42/43		42/43	49	50	51	50	52	52	53	55	99	99
DFT	6															
CSCI					6 or 8											
Alpha/Omega																
ELT		1	1	2		2										
DFT	1															
A to Z ROP																
ELT								20		20						

Career Development: SCANS Competencies

Butte College and Alpha/Omega High School

Competency #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Butte																
ELT																
CLP																
CSCI																
MATH																
Alpha/Omega																
ELT																
DFT																
SCIENCE																
A to Z ROP																
CSL																

Butte College-Alpha/Omega High School Tech Prep:

Electronic Technology

Competency Expectation

Competency Number --->	#1	#2	#3	#4	#5	#6	#7	#8	#9	#10	#11	#12	#13	#14	#15	#16	#17	#18
COMPONENT/ELEMENT																		
Academic Core																		
Biology/Chemistry	YES	YES	YES	YES	YES	YES	YES	NO	YES	NO	NO	NO	NO	NO	NO	NA	NA	NA
							*AA/S											
Communication	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	NO	NO	NO	NO	NO	NO
										*AA/S								
Math	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	NA
								*AA/S										
Physics	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	NO	YES	YES	NO	NO	NO	NO	NO
							*AA/S											
Technical/Vocational	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Preparation																		
Career Development																		
NOICC Competencies	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
SCANS Competencies	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	NA	NA	NA	NA	NA	NA

*Minimum general education competency for all Associate Degree Programs

"We are attempting to educate students today so they will be ready to solve future problems that have not yet been identified using technologies not yet invented based on scientific knowledge not yet discovered."

J.J. Lagowski, 1985